

Summary of Changes

to

P 440.1-4

NETL Fire Detection Devices and Alarm Systems

Revised Version Issued as P 440.1-4A of 6/17/03

NETL Procedure 440.1-4, NETL Fire Detection Devices and Alarm Systems, of 7/5/01, has undergone minor revisions. The revisions to the Procedure include standardization of the quality control requirements and upgrading definitions to be consistent with the current organization. Please replace NETL Procedure 440.1-4 with NETL Procedure 440.1-4A.

U.S. Department of Energy

National Energy Technology Laboratory

PROCEDURE

P 440.1-4A

DATE: 6/17/03

SUBJECT: FIRE DETECTION DEVICES AND ALARM SYSTEMS

1. PURPOSE. To document the requirements, responsibilities, and processes for operation and maintenance of NETL's fire detection devices and fire alarm systems.
2. CANCELLATION. NETL Procedure 440.1-4, NETL Fire Detection Devices and Alarm Systems, of 7/5/01.
3. REFERENCES.
 - a. Statutory ES&H Standards:
 - (1) 29 CFR 1910.38, Employee Emergency Plans and Fire Prevention Plans.
 - (2) 29 CFR 1910.164, Fire Detection Systems.
 - (3) 29 CFR 1910.165, Employee Alarm Systems.
 - b. Reference ES&H Standards:
 - (1) NFPA 70, National Electric Code.
 - (2) NFPA 72, National Fire Alarm Code.
 - (3) NFPA 101, Life Safety Code.
4. DEFINITIONS.
 - a. Automatic Fire Detection Device -- A device designed to automatically detect the presence of fire by heat, flame, light, smoke, or other products of combustion.
 - b. Building -- A permanent structure identified by Site Operations Division and indicated as such by having a building number.

- c. Fire Alarm System -- A system which may consist of alarm panels, and flow and smoke/heat sensors which can be activated within an area when a set temperature is reached or when water flow is sensed in the automatic fire suppression system. It is designed to notify personnel of a dangerous situation.
- d. FPPM -- Fire Protection Program Manager. The designated NETL Manager who has the day-to-day authority and responsibility to administer NETL's Fire Protection Program.
- e. SSC -- Site Support Contractor (Site Operations).

5. QUALITY CONTROL.

- a. Ensure that NETL's fire detection and alarm systems are designed, installed, inspected, tested, and maintained on a regular basis and that any inoperable or outdated equipment is replaced.
- b. This NETL Directive will be reviewed (and revised as needed) by the FPPM each year for the first 3 years after initial implementation and once every 3 years thereafter to ensure that it is kept up to date with current requirements. More frequent reviews and revisions could occur due to significant changes in regulatory and site conditions.

6. RESPONSIBILITIES.

- a. Line Managers shall:
 - (1) Ensure the effective implementation of the requirements of this Procedure within their respective organizations.
 - (2) Ensure that each employee knows the various and preferred means of reporting emergencies (e.g., manual pull box alarms, telephones, public address systems, or radio, depending on the employee's job responsibilities and the location and type of emergency).
- b. Employees shall:
 - (1) Be able to recognize NETL Fire Alarm Notification signals and evacuate the area as prescribed in General Employee Emergency Response Training.
 - (2) Understand and utilize, when necessary, the preferred means of reporting an emergency in their area (e.g., manual pull box alarms, telephones, public address systems, or radio, depending on the employee's job responsibilities and the location and type of emergency).
 - (3) Not alter, change, or inhibit by blocking or covering, any fire protection device or alarm system.

- (4) Notify the FPPM of any needed changes, repairs, or modifications to a fire protection device or alarm system.

c. The FPPM or designee shall:

- (1) Ensure that all automatic fire detection and fire alarm systems are maintained in an operable condition and tested and adjusted as required to maintain proper reliability. Please refer to the NETL Fire Protection Inspection and Testing Procedure and Fire Protection Maintenance Procedure for additional information.
- (2) Ensure that fire detection devices and fire alarm systems are serviced, maintained, and tested only by persons properly trained in their designed operation and functions necessary for reliable and safe operation.
- (3) Review and approve all fire alarm system requests to ensure that the devices and equipment to be constructed and installed in buildings are appropriate for the purpose for which they are intended.
- (4) Ensure that acceptance tests and inspections are performed on fire alarm systems.
- (5) Ensure that annual training is provided for Security Personnel on the operation of the NETL Fire Protection Alarm System.
- (6) Establish and maintain a list of buildings containing fire alarm systems and automatic fire detection devices, including their location within the building.
- (7) Establish and maintain standards and work practices for maintaining and operating fire alarm systems at NETL consistent with this Procedure and OSHA and NFPA requirements.
- (8) Determine need and applicability for fire protection devices and alarm systems for structures other than buildings.
- (9) Determine need and applicability for automatic fire detection systems in structures other than buildings.
- (10) Ensure proper notification is made to all affected persons for any testing or outages of fire detection devices and alarm systems.

d. The SSC ES&H Staff shall:

- (1) Conduct system outages for testing, system service, construction, renovation, project work, etc.

- (2) Restore all fire alarm systems and components to normal operating condition as promptly as possible after each test or alarm.
 - (3) Ensure all fire alarm system issues are resolved or referred to the FPPM.
- e. NETL SSCs shall implement, within their own workforce and workplace, the requirements set forth in this Procedure, consistent with contract terms, task/subtask requirements, and technical direction.

7. TRAINING REQUIREMENTS.

- a. NETL on-site personnel shall be trained regarding the locations and operation of manual fire alarms at NETL. Line Managers shall insure that their employees have received this training.
- b. The FPPM shall insure that on-site personnel who inspect and maintain alarm and fire detection systems at NETL have received, and continue to receive, the necessary training to competently perform these functions.

8. DOCUMENT CONTROL.

- a. Training records shall be maintained by the ES&H Records Center and SSC ES&H Training Team. Inspection and maintenance records shall be maintained by the SSC ES&H Specialist and ES&H Records Center.
- b. The most recent and official controlled hard copy version of this Procedure shall reside with NETL's Directives Coordinator. An electronic version of this controlled Procedure shall be placed on the NETL Intranet for employee use. Printed hard copies of this Procedure (e.g., those printed from the Intranet) shall be considered non controlled documents.

9. PROCEDURE.

- a. General Requirements for NETL's Fire Alarm Systems
 - (1) Fire alarm systems shall be designed, installed, and maintained in compliance with NFPA requirements.
 - (2) Fire alarm systems shall be designed so that they are compatible and readily integrate with NETL's site-wide alarm notification system.
 - (3) All buildings at NETL shall be provided with fire alarm systems. Alarm control panels shall provide control of local alarms. Either automatic or manual initiating devices can actuate these systems. Alarm signals shall sound until the actuated device is restored to normal and the control panel reset switch is operated.

- (4) The building alarm system shall include transmission of a separate and distinct coded building alarm signal, for each zone, from the building to the NETL receiver. Systems shall be designed to provide local warning for building evacuation and area notification for emergency response personnel.
- (5) The alarm systems shall be connected to a centralized computer Alarm Notification System. This system shall be linked to PC terminals that are continuously monitored by site security guard personnel.
- (6) Site security guard personnel through a supervisory alarm system shall monitor the operational status of each alarm system.
- (7) Silent Knight fire alarm control/communication panels shall be installed at NETL-MGN and SIMPLEX alarms shall be installed at NETL-PGH. This requirement ensures compatibility with the existing NETL fire alarm system, and eliminates the extra costs associated with maintaining and stocking spares for multiple manufacturers' systems.
- (8) Fire alarm panels within a facility shall communicate by use of dedicated hard-wired circuits. Fiber optic communication links may be utilized. All dedicated hard-wired circuits shall be installed in dedicated conduit.
- (9) All systems shall be designed to operate at 24 volts. Systems shall be provided with a 24vDC-battery backup and charger. Systems may also be connected to site emergency generators when available.
- (10) FPPM approval shall be required for all new fire alarm systems and fire alarm system modifications.
- (11) Structures other than buildings (e.g., trailers) shall be provided with fire detection and/or alarm systems based on individual needs and existing/ anticipated hazards, at the discretion of the FPPM.

b. Additional Requirements for NETL's Fire Detection Devices and Alarm Systems

- (1) Manual Pull Box Stations -- Non-coded, single-action fire alarm stations shall be located in all buildings at NETL. Upon actuation, all general alarm signals will sound. The actuating handle shall lock in the down position, providing a positive indication that the station has been operated.
- (2) Water Flow Alarms -- All of the sprinkler systems shall be equipped with waterflow devices that initiate an alarm whenever water flows in the system due to an open head, ruptured pipe, or significant leak.
- (3) Automatic Fire Detection Systems, Including Smoke and Heat Detectors -- The need for automatic fire detection systems shall be determined by the FPPM.

Smoke or heat detectors shall normally be specified in areas where a life safety hazard exists, areas with high value electrical or electronic equipment, or where damage to property may be severe during incipient stages of a fire.

- (4) Special Detector Systems -- Detectors that activate special extinguishing systems (e.g., carbon dioxide) shall normally be “cross-zoned.”
- (5) Ventilation Systems -- Ventilation systems may be interfaced to shut down based on smoke duct detector response. A remote test station shall be provided when smoke detectors are installed in ducts 8 feet above the floor.
- (6) When a smoke detector is used strictly for a door release for the purpose of smoke control, it shall be required to report a fire alarm when activated.

Associate Director, OBL